

Title Page

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ABSTRACT

In this research, the appeal factors for biodegradable packaging are studied to find out whether Indonesian consumers are interested in this new type of environmentally friendly packaging. Other than that, this research also studies some other factors that drive consumer choices on packaging. The study using bread as subject for packaging to give clearer image for the respondents. This research utilized a quantitative methodology through online survey in which conjoint analysis study was done and analyzed using SPSS software to process the data. The study result is used to observe the importance level of each attributes and the preferences towards attribute levels. Clustering technique was applied to cluster the respondents into various groups based on their gender, income level, domicile, and environmental awareness in order to deeply understand each group preferences and its implications on packaging. The research finds out that Indonesian consumers have high interest on biodegradable packaging, particularly in seaweed-based packaging. Besides that, brands and packaging design are the other factors that affect the consumers' purchasing behavior and decision.

Key Words: Conjoint Analysis, Biodegradable, Packaging, Brand, Design, Indonesia

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LIST OF ABBREVIATIONS

B2B : Business to Business

B2C : Business to Customer

JABODETABEK : Jakarta, Bogor, Depok, Tangerang, Bekasi

SPSS : Statistical Packages for Social Sciences

CHAPTER 1

INTRODUCTION

1.1 Background

Plastic has become one of the things that cannot be separated from our daily life. Ever since its invention in 1907, people have been using plastic for a lot of things, and indeed it seems inevitable to live today's life without the usage of plastic. Shopping bag, plastic bottle, food packaging, are just a few from many examples of the plastic usage in the modern society. Plastic is very versatile and durable, since it is mainly designed to last for a very long time. In fact, the main advantage of using plastic is its durability if compared to other materials. Some type of the plastic might take from 50 up to 600 years to be biodegraded, depending on the product type and environmental condition (BBC News, 2017).

However, its versatility and durability does not come without a cost. As mentioned before that plastic is designed to last for very long time, destroying plastic has come in a way of the problem in the modern society. Plastic waste is now a major environmental problem all over the world, and it has filled much of space in the land, as well as in the ocean. It is estimated that the total volume of plastic produced so far is 8.3bn tonnes, in which 6.3bn tonnes is now waste, and 79% of that has resided in landfill or natural environment (Jambeck et al., 2015). This vast amount of plastic waste has been driven mainly by the usage of "single use" plastic, where the product is only used once and then got thrown away as waste, such as drink bottles, to food packaging.

To worsen the problem, the plastic comes in many different shape and sizes, meaning that the small piece of plastic gives the same threat to environment as the large one. Due to the nature of the small size plastic waste, much of it will eventually end up in the ocean, and it is estimated that around 10 million tonnes are now in the ocean. The existence of plastic waste in the ocean would definitely be harmful for marine life. The danger could range from the animal being entangled to the plastic or

could mistakenly be consumed as their food, both which would do harm to the animal, and sometimes death.

Based on the fact presented above, it is obvious that plastic has and will continue to give the environment such a dangerous threat. However, it is also inevitable that plastic will always play a major role in modern life, due to its versatility and durability. Because of that, it is important for the industry leaders and scientist all over the world to keep finding the way to reduce plastic consumption. Recently, Coca-Cola, the major beverage company and arguably the major contributor to plastic bottle waste, has pledged to recycle its entire bottle by 2030 (BBC News, 2018). A late paper points to the development of plastic recycling by means of chemical method, making the process much more efficient with lower energy consumption (Garcia et al., 2017). Indeed, we can see an increasing number of industry leaders and scientist taking part in reducing the plastic waste, which eventually would lead up to a better environment.

In addition to the effort to recycle the existing plastic waste, another way to reduce plastic waste is to substitute plastic as a whole. The key task is to find a material that can have similar function as plastic but is environmental friendly. In other words, the world needs a plastic substitute that features plastic's versatility and durability, yet it would be no harm to the environment. Many scientists and start-up companies have already paved the way into having a biodegradable company and some have even started to produce a more environmental friendly, biodegradables plastic. Yet, this industry is still in its early age, and many more research and development works are needed to be done in order to find the best composition to substitute the conventional plastic.

Over years, scientists, activists, and government try to find solution regarding plastic waste problem. Researches range from alternative materials to plastic, recycling plastic waste into useful products, and various possible options in managing plastic waste are done to provide solutions. Other than that, in some countries, governments have tried to tighten the regulation or even ban the use of plastic bags. This attempt is expected to limit the number of plastic waste.

Some existing innovative ideas include using plastic waste as a binding agent for asphalt. The plastic waste is made into pellets which then mixed with the usual rocks and a small amount of bitumen for the asphalt plant (Appiah et.al, 2017). This technique has been applied in several countries like Ghana, and recently is adopted by Indonesia (Kompas, 2017). Besides that, scientists in Spain has discovered wax worms that can eat and biodegrades polyethylene plastic (Bombelli et al., 2017).

Even though some alternatives are already existing; however, it has not been able to bring significant change in the environment. A change in the environment will only be able to happen when there is a change in people's behavior. Hence, further research need to be conducted in order to understand people's awareness and perception regarding plastic waste solutions.

Considering the market potential, Indonesia had 4.6 million tonnes of domestic plastic consumption in 2016 (Global Business Guide Indonesia, 2017). If a renewable, eco-friendly plastic is able to be adopted and used by the market, the bio-plastic business will shift the current-conventional plastic industry players.

Market research is critical to understand what value is important and desirable by consumers. Other than that, consumer's valuation of a product is directly related to the utility or satisfaction associated with each attribute that comprises the product (Baker, 1998). In general, market research aims to understand the consumers, market trends, and performance of the product so that companies able to deliver the right product value to consumers.

Based on the facts above, the researcher wants to conduct market research of biodegradable sandwich packaging in Indonesia. Indonesian market chosen to be the subject of this study due to its large number of population. Moreover, Indonesian population is growing to become more affluent (BCG, 2012); therefore, people are having better purchasing power. Other than that, Indonesia market is still developing; hence, it is interesting to do this study to check whether the Indonesian market (with its people who have relatively low education background compare to developed countries) put more attention in biodegradable packaging and have the awareness towards environment sustainability.

Besides of the main objectives, this study can also be used to compare the result with similar researches done in another country. Based on previous research done by Datamonitor indicates that the new bioplastic caps for Nestle milk brands in Brazil is likely to be well received by Brazilian market (Datamonitor, 2011). Last but not least, this study hopefully can be used as a recommendation for companies to choose the right packaging for Indonesia market.

1.2 Problem Formulation

In recent years, local companies start to produce biodegradable packaging as an alternative to reduce the use of non-biodegradable packaging. In order to deliver the right product value to the market, the researcher would like to know whether the market really has the desire to buy product with biodegradable packaging, and also what are the factors which drive people to choose biodegradable packaging. Based on the situation explained, the researcher would like to further finding out the preferences of various segment categories.

1.3 Research Questions

In order to address the problem, it is appropriate for the researcher to answer the following questions:

1. Does the market have interest in bread with biodegradable packaging?
2. What attribute is the most important for Indonesian market?
3. Does different segments exhibit different preference towards packaging?

1.4 Research Objectives

- To understand Indonesian market interest on biodegradable packaging.
- To determine the most important attribute for Indonesian market.
- To explain different preferences between various market segments.

1.5 Research Limitations

1. Time – Better data and supporting evidences can be obtained if longer research period is available.
2. Sample size – The number of sample may be too small to be considered as representative of Indonesian consumer.

CHAPTER 2

LITERATURE REVIEW

2.1 Packaging

Packaging is an essential component in selling a product. Packaging exists to deliver products to consumers in perfect condition. It offers protection, promotion, and information. A good and unique packaging able to attract customers to buy the product. Based on the function, packaging differed into primary packaging, secondary packaging, and tertiary packaging. Primary packaging is the material which in direct contact with the content. Secondary packaging is the layer outside the primary packaging which typically group the primary packaging together. Tertiary packaging is the outer layer used for bulk handling to protect the products during the transfer process, the material used for tertiary packaging are usually cardboard box, wooden box, or plastic pallet (Bulteni, 2011).

2.2 Packaging Materials

In industry, packaging material can range from plastic, paper, cardboard, glass, and metal. The types of material that is used to package a product should be chosen based on the product's physical characteristics, including the product's form whether the product is in solid, semi-liquid, or liquid form. Also, considering the boiling, melting point, danger degree of the product is important to prepare the suitable packaging material and the right packaging process.

2.3.1 Plastic

Compared to other types of packaging materials, plastic is widely used everywhere; it is cheap, able to create wide range of forms, light weight, and water resistant. More importantly, its durability and versatility makes plastic a thing of a wonder. Almost every aspect of human life might or might have involved the usage of plastic.

Plastic is made of polymer, an extremely long repetitive molecule. In case of plastic, this polymer is made out of carbon. These polymers' shape makes plastic what it is, which is its plasticity, allowing plastic to be molded into any shapes.

The history of plastic usage goes all the way back to pre-historic time, as early as when human use wood for their living, simply because of cellulose, the main component of wood, is also a type of polymer. Cellulose was also the raw material for the next breakthrough in modern plastic, a material called "Parkesine". Yet, the big breakthrough of plastic comes when Leo Bakeland create the first synthetic plastic out of fossil fuel, paving the way for the creation of different types of plastic such as polystyrene, polyester, polyvinylchloride, polythene and nylon.

The invention of this new versatile, durable and cheap material really drove the growth of industry, with many companies utilize plastics for different type of usage, such as bottle packaging, toys, up to military vehicles. However, for every positive thing that come with plastic, it also brings some disadvantages, something that will be discussed in more detail below.

2.3.2 Plastic Danger Towards Environment

The main problem with plastic is that it takes thousands of years to decompose, resulting in plastic polluting our environment, ranging from side road, landfill, or rather worryingly into the ocean. As stated earlier in Introduction, total volume of plastic in waste so far is around 6.3 bn tonnes, and 79% of that has been sitting in the landfill or natural environment (Jambeck et al., 2015). To make it worse, as plastic comes in different shapes and sizes, much of the smaller plastic would end up in the ocean, and approximately 10 million tons of it are now in the ocean. Plastic existence in the ocean can bring many harmful effect to the marine life, such marine animal become entangled to it or being consumed as food, which in many cases would result in death.

2.4 Biodegradable Packaging

As obvious as it is, the durability and versatility of plastic make it an essential part of our daily life, yet it also brings some huge negative impact towards the earth. Therefore, scientists and innovators have started to bring the concept of biodegradable material – a material made from recyclable sources and can be decompose in a much shorter time compared to conventional plastic-into reality (Song et al., 2009).

Of all the usage of plastic, packaging is one of the most prominent usage for plastic, so innovators have mostly directed their research to create a biodegradable packaging material. There are many sources of biodegradable material, such as cellulose or starch. Moreover, depending on the company, there are different applications for biodegradable packaging, such as for food packaging, drinking cup, up to plastic bottle. More interestingly, many companies add some features to its biodegradable products, such a drinkable biodegradable cup (BBC, 2014).

2.4.1 Problem of Shifting to Biodegradable Packaging

All of these innovations have in part opened up a wider customer perspective on the new biodegradable products that can be used to replace conventional plastic, to help save the environment. Unfortunately, introduction of these relatively new biodegradable has taken some times to really penetrate into a more mainstream market, partly due to some problems related to the biodegradable packaging product itself, such as quality and pricing

2.5 Buying Process of B2B and B2C Market

For most companies, B2B buying process starts with a need recognition. After user recognize the need, they have to define the characteristic or specification of the need, as well as the quantity of the product. Then, user or purchasing department will typically search for supplier, do compare and contrast between different suppliers, and finally do qualification of supplier. After the order complete, typically companies do evaluation and give feedback to the supplier chosen as a part of validation.

While B2B buying process requires long decision making, customers buying process is completely different. Customers buying process always starts with awareness. After that, desire will appear. Desire will drive customer to do research about the product. After simple research done, customer will do action on whether or not to buy the product.

In this kind of buying process, awareness often appears not because of need but due to product advertisement. Typically, prior to purchase decision, customer will directly research common attributes of a product, like packaging, price, and product value. According to Martinez, price of the product reflects its value for the customers (Martinez, 2014).

2.6 Attributes of Consumers' Purchasing Decision

Food packaging materials - the right selection of packaging materials and technologies maintains product quality and freshness during distribution and storage. Materials that have traditionally been used in food packaging include glass, metals (aluminum, foils and laminates, tinfoil, and tin-free steel), paper and paperboards, and plastics (Marsh and Bugusu, 2007).

Design product is constructed by various attributes which build value. Each consumer might value product differently from others, for example a consumer value the taste, while another consumer likes the design of the packaging, while some others might look into the ingredients and nutrition. The element of product packaging has been a tool of communication between the customer and the brand. Because of that, the design of the product packaging, such as color, catchy phrase or something as detailed as consumer value label in the products could be the main method for the brand to really attract customer to buy the product. Zekiri and Hasani (2015) found that innovative product design increases the value of the product, thus will indirectly attract more customers. Food packaging plays a major role in attracting consumer attention and generating sensory and hedonic expectations; which could affect their product perception and purchase decisions (Ares and Deliza, 2010).

2.7 Attributes Levels

Attributes levels must be chosen carefully to represent what would be realistic in the market, and should cover the entire range or representative levels. Therefore, the attribute levels were determined based on the levels that consumers might realistically face which must be capable of being trade-off (Gil and Sanchez, 1997). The study use bread as the product that consumer have to evaluate while in the in-depth surveys, specific attributes and levels are investigated for bread packaging.

Consumer perception of an acceptable brand are usually associated with other attributes such as the product's main materials, benefits, and product appearance – such as product packaging. According to Wang (2013), the attitudes toward visual packaging directly influence consumer-perceived food product quality and brand preference. Therefore, in this research the researcher would like to evaluate the consumer perceived value related to bread packaging based on three attributes - the packaging materials, brand, and the packaging design. Each attributes will further be categorized to three different levels.

Packaging material levels are categorized into three types: plastic, paper, and seaweed packaging. Plastic is one most common material used in food packaging. Plastic products in Indonesia are used by a wide array of industries such as the food and beverage packaging industry which accounts for 60% (GBG, 2016). Plastic is not reactive with inorganic chemicals and do not support the growth of microorganisms hence making it safe to be used as food packaging material (Coles et al., 2003). However, plastic has critical drawback in which it takes long time to degrade and causes environmental damage.

Paper packaging are sheet materials made from an interlaced network of cellulose fibers derived from wood by using sulfate and sulfite. The fibers are then pulped and/or bleached and treated with chemicals such as slimicides and strengthening agents to produce the paper product. Plain paper is not used to protect foods for long periods of time because it has poor barrier properties and is not heat sealable. When used as primary packaging (that is, in contact with food), paper is almost always

treated, coated, laminated, or impregnated with materials such as waxes, resins, or lacquers to improve functional and protective properties (Marsh and Bugusu, 2007).

The use of paper packaging is believed to be more environmentally friendly compared to plastic packaging due to biodegradability. However, there is an issue with paper in which it causes damage towards the environment though forest destruction issue which relates to its production.

Based on the environmental impact, seaweed packaging can be considered to have great-positive impact to the environment. Seaweed packaging is biodegrading in rapid amount of time and when degraded can be used as mineral source for the soil. Other than that, the seaweed production or farming contributes the oxygen and hydrogen production (beneficial for marine creatures) through their photosynthesis process and reduce the carbon emission in the ecosystem. Moreover, marine plants play a vital role in maintaining the balance of marine environments, while serving as a source of food for humankind and important chemical compounds. (Alvaro et.al, 2010).

The experiment provides three different examples of bread packaging to be evaluated by the participants, conventional, minimalist, and unique design.



Figure 1. Example of conventional packaging design



Figure 2. Example of minimalist packaging design



Figure 3. Example of unique packaging design

The designs' differences emphasize on the design of the packaging. During the survey, the packaging picture will be shown in order to give the participants a better visualization regarding the packaging design tested. Although food companies usually invest large amounts of money on package design there are not many published studies about the influence of package characteristics on consumer expectations of food products (Deliza & MacFie, 1996; Lange et al., 2000; Moskowitz, Reiner, Lawlor, & Deliza, 2009; Murray & Delahunty, 2000). Therefore, the researcher wants to check what on what kind of design is most preferred by Indonesian consumer. All packaging elements have to be combined to attract the consumer when purchasing the product (McNeal & Ji, 2003).

Buyers purchasing decision can be affected by many different factors, which one of them is the brand itself. Shehzad et al., (2014) even argue that brand is the only tool that has the ability to change buyer's behavior. This is true in part because brand name often serves as the entry point of interaction with the customer. However, there are some conflicting information regarding the influence of brand towards customer purchasing decision. Study by Hillendbrand et al., (2013) suggests that brand's name can influence the customer judgment about the product and therefore affecting customer's purchasing decision. Yet, another study conducted by Mramba (2015) in case of mobile phone purchasing suggests otherwise, where the purchasing decision is not affected by brand name, but rather on the need, country of origin as well as the phone's durability.

Although the two researches presented above provide contrary information, brand can undoubtedly, to some extent affect consumer behavior. Of course consumer behavior is a complex matter which cannot be determined solely by brand name, but competent brand management would

result in successful brand, and ultimately will produce loyal customer (Chovanová, Korshunov and Babčanová, 2015). Thus, in this dynamic economic condition where many competitors strive to get customers, company must be able to create and design a good brand that can represent the quality of the brand, as well as the company itself.

In this research, the researchers involve three different bread brands: Sari Roti, Bread Talk, and Tous Les Jours. All of the brands are well-known in Indonesia, each with slightly different bread product and target market.

Sari Roti was first established in 1995, and introduced its first commercial bread product in 1996. Among all the three brands, Sari Roti with its parent company, PT Nippon Indosari Corporation, is the only public listed company and arguably the largest bread producer in Indonesia. Sari Roti sells different type of bread, such as sliced bread, filled bread as well as cakes, in which they focus on selling those products through retail supermarket. By relying on retail supermarket and selling affordable bread, Sari Roti covers wide segment of customer, but with more focus on low to middle class customer here in Indonesia.

Bread Talk on the other hand is a bit different compared to Sari Roti, in terms of target customer as well as the type of the company. Bread Talk is a Singapore franchise, firstly introduced in Indonesia in 2003. While Sari Roti sells its bread product through retail supermarket, Bread Talk sells its bread product by opening store mainly located in shopping mall all over Indonesia. By using the word “contemporary bread”, Bread Talk sells many different breads and cakes through its open kitchen store in Indonesia’s shopping mall. With slightly higher price index compared to Sari Roti and not utilizing retailer to distribute their bread, Bread Talk aims for middle class customer looking for new concept of consuming bread products.

Similarly, the last bread producer used in this research is a Korean company, TOUS les JOURS. However, unlike Sari Roti and Bread Talk, TOUS les JOURS is a global company, already operating in 8 countries with the first establishment in Indonesia came in 2011. The business concept is similar with

Bread Talk, distributing their bread through stores located inside the shopping mall. What

make TOUS les JOURS different from Bread Talk, is their café-like stores. Inside their bread store in the shopping mall, customer can actually sit and enjoy some coffee or other beverages made fresh by their staff. Therefore, in addition to modern bread, they also offer cakes and beverages for the customers. This variation in their product, as well as the different store concept, may have led TOUS les JOURS to charge more for their bread, making it more expensive compared to Sari Roti and Bread Talk.

2.8. Past Research

This research refers to the latest research done by Miranda Putri (2012) about consumer preferences on buying Batik based on its attributes. The research apply various combinations and use rating based conjoint analysis to obtain the data.

Another research which is used as a reference is a research by Susanti (2011) which aims to understand which of the attributes is considered as the most important by consumers in buying salted egg. Susanti's research also give combination of salted egg attributes in which consumers may like. The research observed the relative importance of attributes and utility value of the attributes levels. Cluster analysis was done in order to categorize various market segment.

CHAPTER 3

MATERIALS AND METHODS

3.1 Research Methodology

Conjoint analysis is a useful tool to investigate the effect of different package features on consumer purchase intention (Deliza, Rosenthal, & Silva, 2003). This methodology could be used to estimate the relative importance of different package attributes on consumer perception of food products (Ares and Deliza, 2010).

Conjoint analysis can be described as a survey based market research technique which help to understand customer's decision making and their preferences. It works to determine how consumers value different attributes in a single product or service, so that the researcher able to find out the perfect combination of attributes that is wanted by the market. Further, this result will help researcher or company to build a product or service which attributes are suitable based on the customer preferences.

Conjoint analysis is a critical approach to recognize the market desire, help in product positioning, as well as help to prevent failure before the product is launched to the market. Results of conjoint analysis studies have commonly allowed for not only the comparison of consumer preferences between products and attributes, but also both market segmentation and simulations (Hall, at al., 2010).

According to Vithala Rao (2014), there are four types of conjoint analysis methods: the traditional method that uses stated preference ratings (rating-based conjoint analysis); choice-based conjoint analysis that uses stated choices; adaptive conjoint analysis developed in part to handle the issue of large numbers of attributes, and self-explicated conjoint analysis, which is a bottom-up method.

For this research, the researcher use ranking-based conjoint analysis. Ranking-based conjoint analysis is widely used in various fields such as marketing research. Ranking-based conjoint involves

asking the respondents to rank a series of concept cards (each card displayed a product concept consisting of multiple attributes).

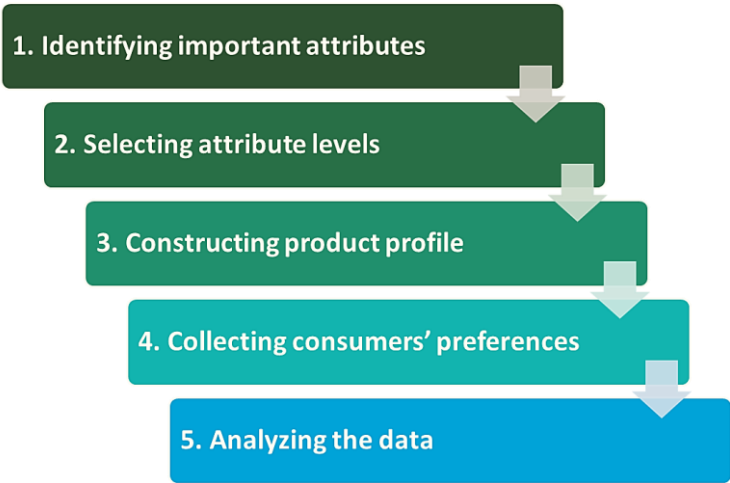


Figure 4. Conjoint analysis steps

Attributes refer to characteristics or features that attach to the products. Identification of attributes starts by determine the key characteristics of the products that most possibly affect consumer decision making to buy the products. Example of product attributes are design, size, brand, price, and etc.

Attribute levels should comprise the full range of possibilities for existing products or can also be products that may not yet exist that is going to be investigated (Orme, 2002). This study integrates three attributes in which each has three levels. In this research, consumers are confronted with different product profiles. Attributes chosen covers: packaging materials, brand, and design.

Table 1. Attributes of packaging and their levels

Attributes		
Packaging Materials	Brands	Packaging Designs
Plastic	Sari Roti	Conventional
Paper	Bread Talk	Minimalist
Seaweed	TOUS les JOURS	Unique

3.2 Orthogonal Array

Orthogonal array is designed to capture the main effects for each factor level. Interactions between levels of one factor with levels of another factor are assumed to be negligible (IBM, 2011). The use of orthogonal array is important as the starting point of conjoint analysis as it simplifies the design of the experiment and minimalizes number of choices. Each set of factor levels in an orthogonal design represents a different version of the product under study and should be presented to the subjects in the form of an individual product profile. This helps the respondents to focus on only the product currently under evaluation. Without orthogonal array, respondents would have to rank 27 choices (3 x 3 x 3).

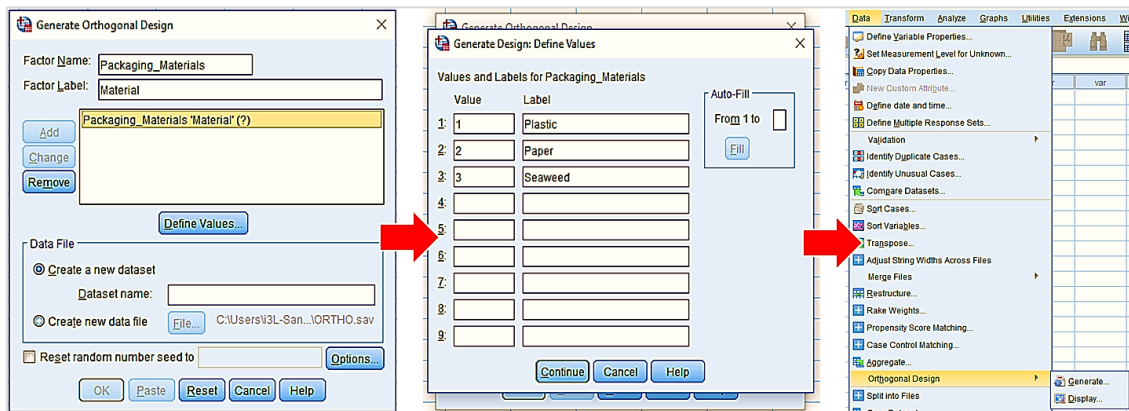


Figure 5. Orthogonal SPSS

3.3 Test Cards

The data taken by utilizing twelve test cards which were generated using orthogonal array through SPSS software.

Table 2. List of test cards

Card ID	Materials	Brand	Design
1	Paper	Sari Roti	Unique
2	Paper	Bread Talk	Conventional
3	Plastic	Bread Talk	Unique
4	Seaweed	Bread Talk	Conventional

5	Seaweed	Sari Roti	Unique
6	Seaweed	Bread Talk	Minimalist
7	Paper	Sari Roti	Conventional
8	Plastic	Sari Roti	Conventional
9	Paper	Tous Les Jours	Unique
10	Paper	Sari Roti	Minimalist
11	Plastic	Tous Les Jours	Minimalist
12	Seaweed	Tous Les Jours	Conventional

3.4 Sampling

Sampling is the process of selecting units to represent the population of interest.

3.4.1 Sampling Size

Sample sizes for conjoint studies generally accommodate a minimum of about 200 per group. For investigational work and developing hypotheses about a market, between thirty and sixty respondents may do (Orme, 2005). Based on the literature, this research tries to involve minimum thirty up to sixty respondents in order to investigate the consumer's preference on biodegradable packaging.

3.4.2 Sampling Method

In this survey, the researcher used non-probability sampling method. With non-probability sampling, the probability that each element will be included in the sample cannot be specified. In this sampling method, the researcher using convenience sample. Convenience sample is one main type of non-probability sampling methods. Convenience sample is made up of people who are easy to reach.

3.5 Consumer Evaluation

The cards were presented to participants. Each card contains mix of three attributes with different attributes levels in which participants have rank they card they preferred in order (1-12 most to least preferred) using the drag and drop survey tool.

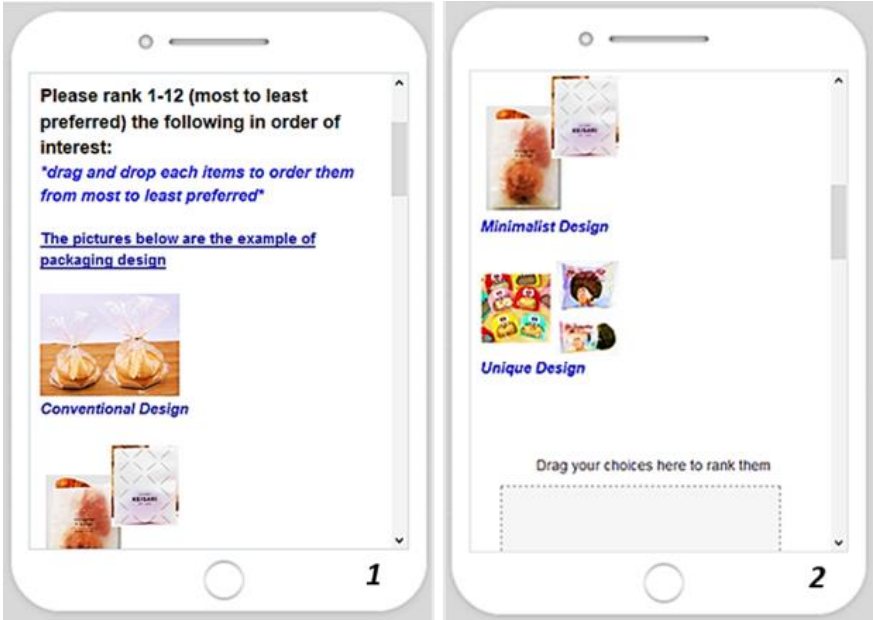
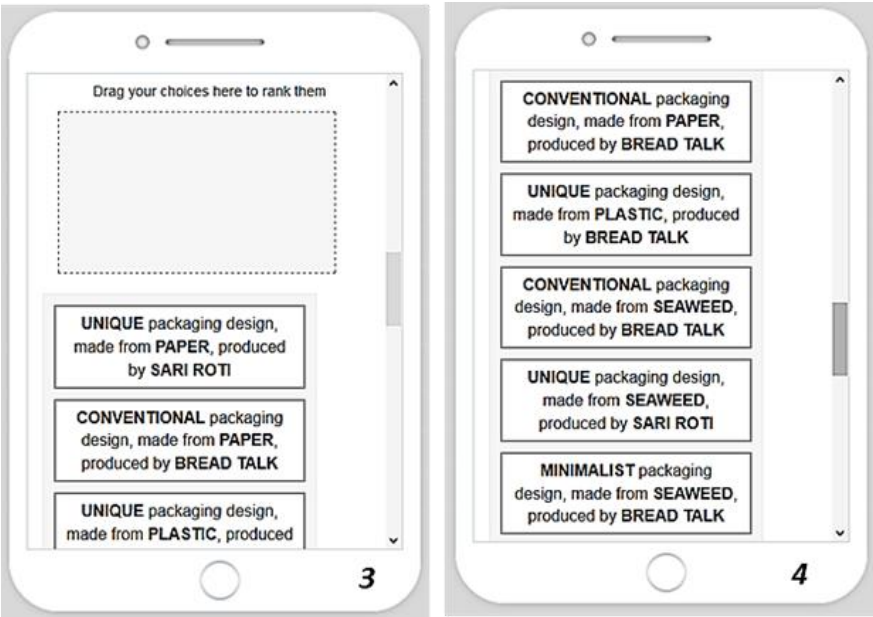


Figure 6. Drag and drop survey instruction with explanatory image



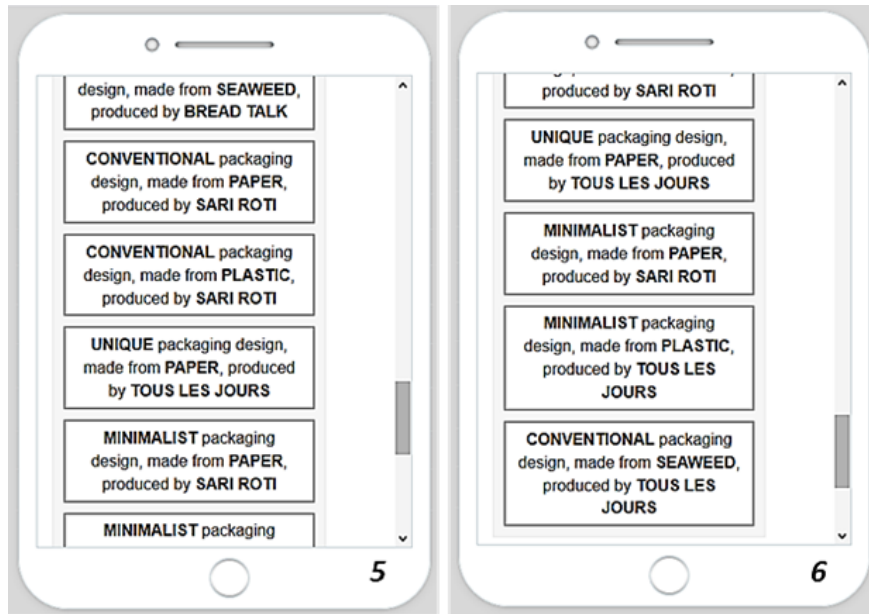


Figure 7. Drag and drop survey profiles

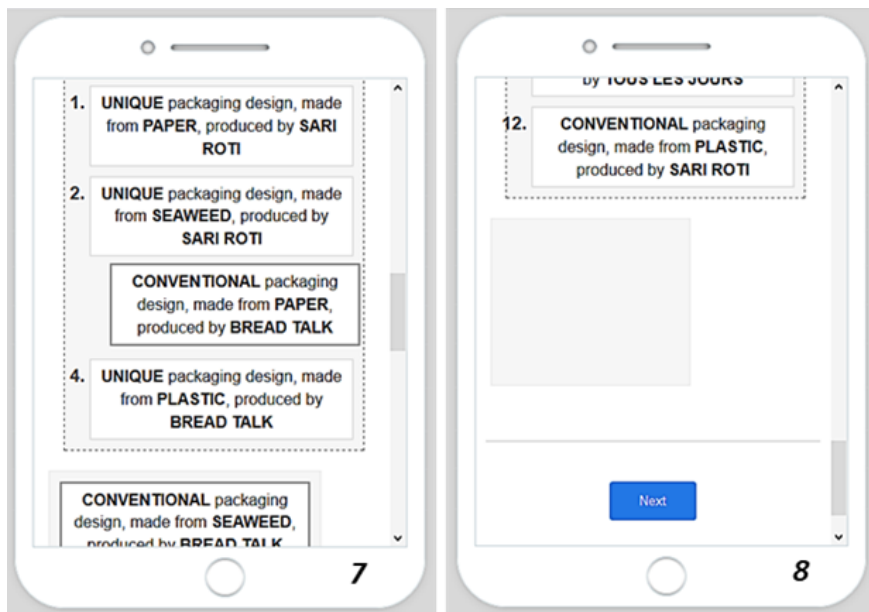


Figure 8. Drag and drop running survey example

3.6 Participants' Profile

This study involves approximately thirty up to sixty respondents, with target age 21 up to 34 years old in Indonesia. Based on Nielsen study, millennials (age 21-34) appear more responsive to sustainability actions (Nielsen, 2014). In this study, therefore the researcher would like to check whether millennials are concern about the environmental issue.

The last chapter of the survey includes demographic question. This kind of questions is important for the researcher to understand the consumer pattern, including their age, gender, educational background, income, location, and whether they care about the environment.

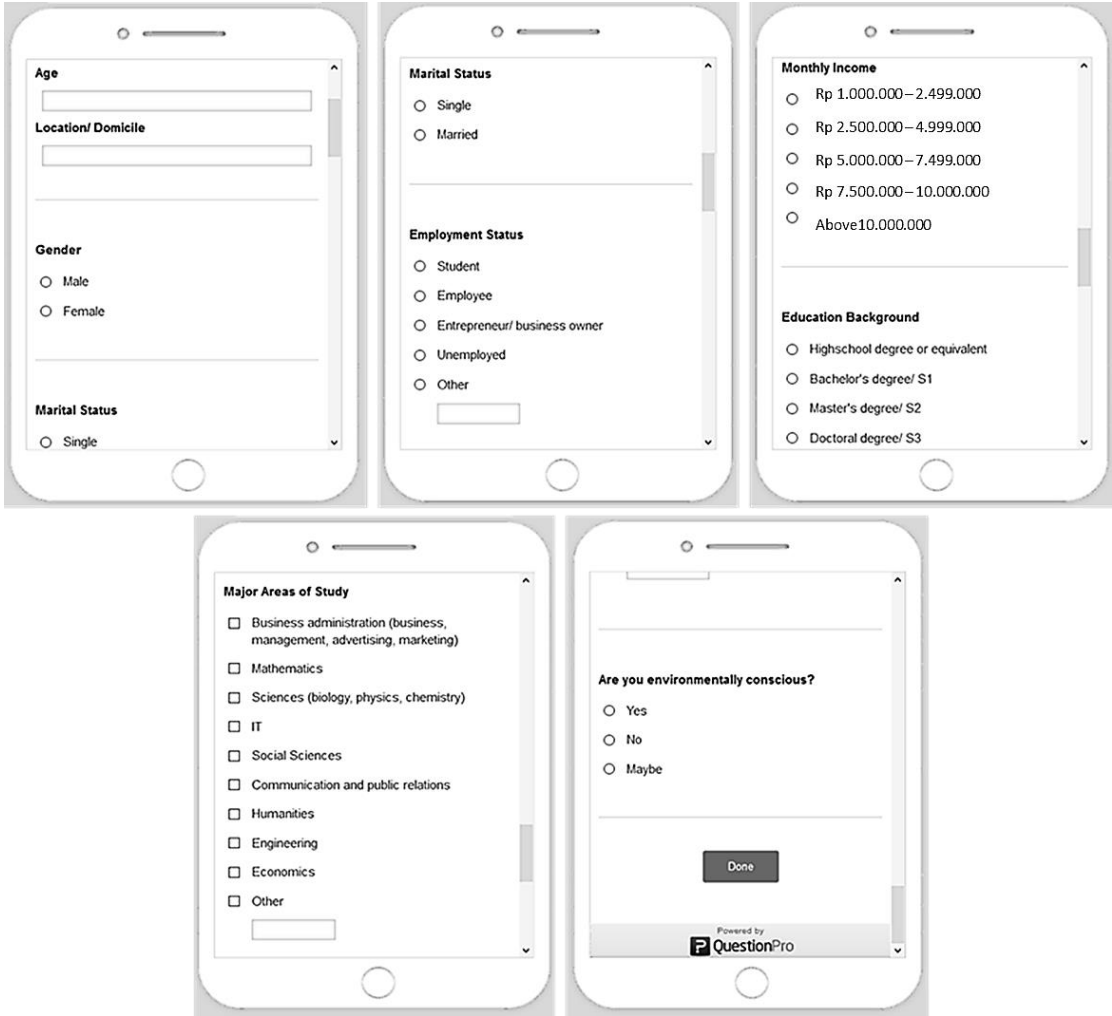


Figure 9. Demographic survey questions

3.7 Data Collection

The distribution of the web-based survey was done via online messages with the help of colleagues, family, and friends. After the target number of sample or participants was achieved, the data will be then downloaded as an excel data.

3.8 Data Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	
1	Response ID	Please rank 1-12 (most to least preferred) the following in order of interest													Age	Location/ Domicile	Gender	Marital Status	Employment Status	Monthly Income	Education Background	Are you environmentally conscious?
2		UNIQUE pack	CONVENTION	UNIQUE pack	CONVENTION	UNIQUE pack	MINIMALIST	CONVENTION	CONVENTION	UNIQUE pack	MINIMALIST	MINIMALIST	CONVENTION									
3	20783149																					
4	20783238																					
5	20783359	10	7	5	6	9	4	11	12	3	8	1	2	21	Jakarta	2	1	1	1	2	1	
6	20783609	9	5	11	2	4	3	6	12	8	7	10	1	22	Jakarta Timur	2	1	1	3	1	1	
7	20783833	9	8	12	5	4	1	7	11	2	6	10	3	22	Jakarta	2	1	1	2	2	1	
8	20783901	5	10	7	9	6	1	11	12	4	3	2	8	26	Jakarta	1	1	2	5	2	3	
9	20783917	6	7	11	4	2	1	9	12	8	5	10	3	26	Semarang	2	1	2	1	2	1	
10	20784132	8	6	11	3	4	1	8	12	5	7	10	3	21	Jakarta	1	1	1	1	2	1	
11	20784189																					
12	20784311	4	5	3	12	9	10	8	7	1	6	2	11	22	Jakarta	1	1	1	3	1	1	
13	20784384	3	10	4	9	2	6	8	12	1	7	5	11	21	Jakarta	2	1	1	1	1	1	
14	20784411																					
15	20784887	7	6	11	3	4	1	8	12	5	10	9	2	21	Jakarta	2	1	1	2	2	1	
16	20788266	3	7											21	Semarang	1	1	1	1	1	1	
17	20799535	3	8	12	7	9	4	6	10	1	5	11	2									
18	20801551																					
19	20801640	3	10	2	8	7	1	11	12	4	6	5	9	21	Semarang	1	1	1	1	2	3	
20	20801724	2	7	12	8	3	6	9	11	1	4	5	10	21	Jakarta	2	1	1	3	2	1	
21	20805015	12	4	10	1	9	3	6	5	11	8	7	2	26	Surabaya	2	1	4	2	3	2	
22	20805450													2	28	Jakarta	2	1	2	5	3	1
23	20805541	8	6	12	3	7	1	5	11	9	2	10	4	21	Jakarta	2	1	2	3	2	1	

Figure 10. Survey raw data file (data in the red boxes are excluded)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Response ID	PREF1	PREF2	PREF3	PREF4	PREF5	PREF6	PREF7	PREF8	PREF9	PREF10	PREF11	PREF12	Location/ Domicile	Gender	Monthly Income	Environmentally Consciousness
2	20806787	8	4	3	9	12	11	7	5	2	6	1	10	Bandung	1	2	3
3	20841866	5	4	11	8	7	6	3	12	2	1	10	9	Bandung	1	1	1
4	20846890	7	8	11	4	2	1	9	12	6	5	10	3	Bandung	1	1	1
5	20814309	9	3	11	5	8	4	6	12	2	7	10	1	Bandung	2	2	3
6	20806502	4	5	7	12	9	10	6	8	1	2	3	11	Bekasi	2	2	1
7	20808087	8	6	11	3	4	2	9	12	5	7	10	1	Bekasi	2	1	1
8	20806206	6	9	11	3	2	1	7	12	8	5	10	4	Bogor	2	2	3
9	20815035	1	9	2	8	3	5	11	10	4	6	7	12	Bogor	2	1	3
10	20813179	2	4	10	6	7	8	5	12	1	3	11	9	East Jakarta	2	2	1
11	20837931	6	8	12	4	1	2	9	11	5	7	10	3	East Jakarta	1	3	1
12	20874304	6	9	10	4	1	2	8	12	5	7	11	3	East Jakarta	1	5	1
13	20851080	6	7	10	5	2	1	9	11	8	3	12	4	East Jakarta	2	1	1
14	21003071	6	10	7	9	5	1	11	12	4	2	3	8	Jakarta	1	5	1
15	20784384	3	10	4	9	2	6	8	12	1	7	5	11	Jakarta	2	1	1
16	20824630	1	7	4	6	2	9	8	10	12	3	5	11	Jakarta	2	1	1
17	20783901	5	10	7	9	6	1	11	12	4	3	2	8	Jakarta	1	5	3
18	20784132	8	6	11	3	4	1	9	12	5	7	10	2	Jakarta	1	1	1
19	20784311	4	5	3	12	9	10	8	7	1	6	2	11	Jakarta	1	3	1
20	20804804	9	4	12	5	10	2	6	7	11	3	1	8	Jakarta	1	1	1
21	20807057	9	5	11	2	4	3	6	12	7	8	10	1	Jakarta	1	2	3
22	20808562	4	3	6	10	12	11	2	8	5	7	1	9	Jakarta	1	2	1

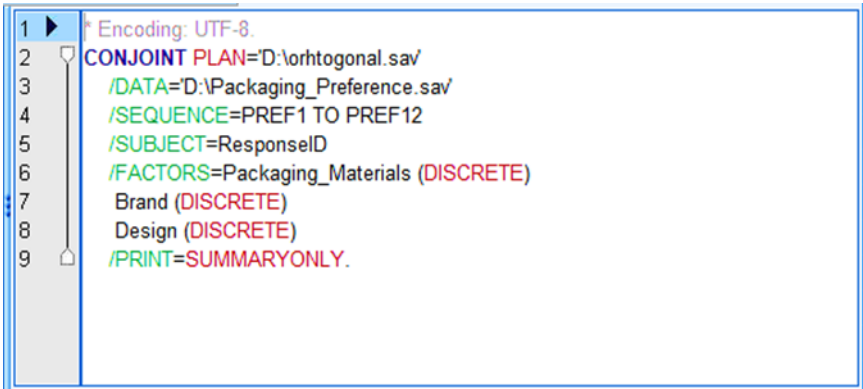
Figure 11. Cleaned data file

Response ID	PREF1	PREF2	PREF3	PREF4	PREF5	PREF6	PREF7	PREF8	PREF9	PREF10	PREF11	PREF12	
1	20783359	10	7	5	6	9	4	11	12	3	8	1	2
2	20783609	9	5	11	2	4	3	6	12	8	7	10	1
3	20783833	9	8	12	5	4	1	7	11	2	6	10	3
4	20783901	5	10	7	9	6	1	11	12	4	3	2	8
5	20783917	6	7	11	4	2	1	9	12	8	5	10	3
6	20784132	8	6	11	3	4	1	9	12	5	7	10	2
7	20784311	4	5	3	12	9	10	8	7	1	6	2	11
8	20784384	3	10	4	9	2	6	8	12	1	7	5	11
9	20784887	7	6	11	3	4	1	8	12	5	10	9	2
10	20799535	3	8	12	7	9	4	6	10	1	5	11	2
11	20801640	3	10	2	8	7	1	11	12	4	6	5	9
12	20801724	2	7	12	8	3	6	9	11	1	4	5	10
13	20804015	12	4	10	1	9	3	6	5	11	8	7	2
14	20804541	8	6	12	3	7	1	5	11	9	2	10	4
15	20804804	9	4	12	5	10	2	6	7	11	3	1	8
16	20805184	6	11	7	9	2	8	3	12	1	5	4	10
17	20805214	6	11	7	9	4	1	10	12	5	2	3	8
18	20805289	7	5	10	4	3	2	8	12	11	9	1	6
19	20805291	8	6	11	3	4	1	9	12	7	5	10	2
20	20805444	7	12	6	10	5	2	11	9	4	3	1	8
21	20805454	6	8	7	3	11	1	4	9	12	2	5	10
22	20805662	7	8	11	4	3	1	9	12	6	5	10	2

Figure 12. Data input for SPSS conjoint analysis

SPSS is a software used for logical statistical analysis. SPSS software has the ability to perform various types of statistic like descriptive statistics, bivariate statistics, prediction, geo spatial analysis, etc. In this research, utilizing SPSS software will help to analyze the large number of data. Considering the type of data that will be inputted and the desirable outcome, conjoint analysis SPSS will be the most suitable analysis being used in this research. The desired output will be in form of importance rate in which able to measure the consumer preference regarding attributes and attribute levels.

The survey results were collected and downloaded into excel data. The data will be then analyzed using IBM SPSS 25 software and run using syntax SPSS. However, before that, as can be seen in figure 10. the raw data has to be sorted first in order to exclude the incomplete data.

A screenshot of the SPSS Syntax Editor window. The window title is 'Encoding: UTF-8'. The syntax code is as follows:

```
1  ▶ CONJOINT PLAN='D:\orhtogonal.sav'  
2  
3  /DATA='D:\Packaging_Preference.sav'  
4  /SEQUENCE=PREF1 TO PREF12  
5  /SUBJECT=ResponseID  
6  /FACTORS=Packaging_Materials (DISCRETE)  
7  Brand (DISCRETE)  
8  Design (DISCRETE)  
9  /PRINT=SUMMARYONLY.
```

Figure 13. Syntax editor for conjoint analysis

After typing all the commands, select Run menu, then the output will be generated conjoint and complementary output. The conjoint results include: utility values and relative importance. Attribute Importance is also known as Relative Importance, shows which attributes of a product or service are more or less important when making a purchasing decision. While utility value shows satisfaction level towards attributes level.

1	Response ID	PREF1	PREF2	PREF3	PREF4	PREF5	PREF6	PREF7	PREF8	PREF9	PREF10	PREF11	PREF12	Gender	.i
2	20783901	5	10	7	9	6	1	11	12	4	3	2	8	1	1
3	20784132	8	6	11	3	4	1	9	12	5	7	10	2	1	1
4	20784311	4	5	3	12	9	10	8	7	1	6	2	11	1	1
5	20801640	3	10	2	8	7	1	11	12	4	6	5	9	1	1
6	20804804	9	4	12	5	10	2	6	7	11	3	1	8	1	1
7	20805444	7	12	6	10	5	2	11	9	4	3	1	8	1	1
8	20805662	7	8	11	4	3	1	9	12	6	5	10	2	1	1
9	20806787	8	4	3	9	12	11	7	5	2	6	1	10	1	1
10	20806801	4	7	3	5	12	2	10	11	1	9	8	6	1	1
11	20807057	9	5	11	2	4	3	6	12	7	8	10	1	1	1

1	Response ID	PREF1	PREF2	PREF3	PREF4	PREF5	PREF6	PREF7	PREF8	PREF9	PREF10	PREF11	PREF12	Gender	.i
2	20783359	10	7	5	6	9	4	11	12	3	8	1	2	2	2
3	20783609	9	5	11	2	4	3	6	12	8	7	10	1	2	2
4	20783833	9	8	12	5	4	1	7	11	2	6	10	3	2	2
5	20783917	6	7	11	4	2	1	9	12	8	5	10	3	2	2
6	20784384	3	10	4	9	2	6	8	12	1	7	5	11	2	2
7	20784887	7	6	11	3	4	1	8	12	5	10	9	2	2	2
8	20801724	2	7	12	8	3	6	9	11	1	4	5	10	2	2
9	20804015	12	4	10	1	9	3	6	5	11	8	7	2	2	2
10	20804541	8	6	12	3	7	1	5	11	9	2	10	4	2	2
11	20805214	6	11	7	9	4	1	10	12	5	2	3	8	2	2
12	20805289	7	5	10	4	3	2	8	12	11	9	1	6	2	2

Figure 14. Clustering example

In addition, in order to generate deeper analysis, the researcher cluster the result based on the participants' profile: gender, income level, domiciles, and environmental awareness. The clustered groups will then be analyzed using conjoint analysis in SPSS in order to obtain the relative importance and utility value. Each cluster will have two different categories. Example on clustering the gender, the data are divided into male and female participants (Figure 14.) code with number 1 stands for male, code with number 2 stand for female. After separating the data, data can be then inputted into SPSS and ran using the syntax SPSS.

CHAPTER 4

RESULTS

4.1 Survey Results

From the survey which was conducted, there was 231 survey participants who started the survey. However, only 107 respondents who completed all the survey until finish while the other discontinue or filled the survey incompletely. After cleaned up the data, only 83 valid-complete data were used and processed to produce the result.

Table 3. Survey participants' profile

Category	Total
Male	30
Female	53
Low Income	29
Middle Upper Income	54
JABODETABEK	49
Outside JABODETABEK	34
Environmentally Aware	58
Relatively Aware	25
Total Respondents	83

4.2 Conjoint Analysis – All Respondents

The result of conjoint analysis is in the form of utility value and relative importance.

4.2.1 Utility Value

Utility score is used to measure the relative level of satisfaction. Higher utility values indicate greater preference chosen by consumers. As the opposite, low utility value indicates the opposite.

Table 4. Utility value from all responses

		Utility Estimate	Std. Error
Packaging Materials	Plastic	-.105	.361
	Paper	-.022	.361
	Seaweed	.127	.361
Brand	Sari Roti	.015	.361
	Bread Talk	.097	.361
	Tous Les Jours	-.112	.361
Design	Conventional	.060	.361
	Minimalist	-.176	.361
	Unique	.116	.361

Source of information: Data Analysis

From the utility values, it can be concluded that respondents have greatest preference towards packaging material from seaweed. For brand attribute, respondents have highest preference on Bread Talk, while for the design respondents mostly attracted with unique packaging design.

Meanwhile, standard error is the type of standard deviation and it is an estimation of how much sample means vary from standard deviation of the sampling (Altman and Bland, 2005). In other words, it is a measure of how precise the sample mean is. Standard error would decrease as sample size increase due to the reduced chance of variation. Standard error should be used to indicate the uncertainty of the estimate means of the measurement. In this result, the standard error is considerably high due to the small number of sample.

4.2.2 Relative Importance

Table 5. Relative importance value from all responses

Packaging Materials	33.960
Brand	32.706
Design	33.334

Source of information: Data Analysis

Relative importance value measures the percentage of each attributes. It shows which attributes is important and affecting consumers' preference in bread packaging. From the relative importance result, can be seen that when respondents when they buy a bread, they value the bread packaging materials the most, while after that comes design and brand.

4.3 Conjoint Analysis Clustering Based on Gender

Table 6. Conjoint result of male group

Male Group			
Attributes	Relative Importance	Attribute Levels	Utility Value
Packaging Materials	37.109	Plastic	-.253
		Paper	-.126
		Seaweed	.379
Brand	25.230	Sari Roti	.195
		Bread Talk	-.218
		Tous Les Jours	.023
Design	37.661	Conventional	.080
		Minimalist	-.069
		Unique	-.011

Source of information: Data Analysis

Table 6. shows that for the tested male participants, design is the most important attribute, with the relative importance value of 37.661. On the other hand, the importance of brand is the least preferred attributes for the male participants, with its relative importance value of 25.230. Packaging material comes in the middle between design and brand, with the value of relative importance is 37.109.

Moreover, among other attribute levels for packaging materials, seaweed has the highest utility value, scoring 0.379. for brand, Sari Roti has the highest attribute levels with the value of 0.295. Conventional style is the most preferred attribute levels in terms of design with the utility value of 0.080.

Table 7. Conjoint result of female group

Female Group			
Attributes	Relative Importance	Attribute Levels	Utility Value
Packaging Materials	32.705	Plastic	-.063
		Paper	.006
		Seaweed	.057
Brand	35.962	Sari Roti	-.101
		Bread Talk	.302
		Tous Les Jours	-.201
Design	31.333	Conventional	.019
		Minimalist	-.145
		Unique	.126

Source of information: Data Analysis

In contrast with male participants, based on table 6. design is the least preferred attribute for female participants. It is proven by its relative importance value of 31.333, which is the lowest among the other options. For female participants, brand is the most important attributes, with its relative

importance value of 35.962. Packaging materials comes between brand and design with the relative importance value of 32.705.

In regards to the attribute levels of each choice, seaweed has the highest utility value for packaging materials, with the value of 0.057. For brand, Bread Talk has the highest utility value of 0.302, while unique is the most preferred attribute levels for design, with its utility value of 0.126.

4.4 Conjoint Analysis Clustering Based on Income Level

Table 8. Conjoint result of low income group

Low Income Group			
Attributes	Relative Importance	Attribute Levels	Utility Value
Packaging Materials	39.441	Plastic	-.262
		Paper	.060
		Seaweed	.202
Brand	29.262	Sari Roti	.024
		Bread Talk	.012
		Tous Les Jours	-.036
Design	31.296	Conventional	.107
		Minimalist	-.167
		Unique	.060

Source of information: Data Analysis

In table 8. the low income group, packaging material is the most preferred attribute, with its relative importance value of 39.441, as shown in table above. Brand, on the other hand is the least preferred attribute, with the relative importance value of 29.262. Design comes between the two, with value of relative importance is 31.296.

Between the attribute levels for packaging materials, seaweed has the highest utility value, which is 0.202, while for brand, Sari Roti has the highest utility value of 0.024. In design, conventional design is the most preferred utility, with its value of 0.107.

Table 9. Conjoint result of middle to high income group

Middle to High Income Group			
Attributes	Relative Importance	Attribute Levels	Utility Value
Packaging Materials	30.972	Plastic	-.088
		Paper	-.038
		Seaweed	.126
Brand	33.965	Sari Roti	-.006
		Bread Talk	.189
		Tous Les Jours	-.182
Design	35.063	Conventional	.019
		Minimalist	-.107
		Unique	.088

Source of information: Data Analysis

In contrast to low income group in table 9. packaging materials is the least preferred option for middle to elite group, with its relative importance is 30.972. For middle to elite group, design is the most preferred attribute, with relative importance value of 35.063. Brand comes in the middle, with its relative importance value of 33.965.

For the different attribute for packaging materials, seaweed has the highest utility value of 0.126, while bread talk is the most preferred attribute for brand, with utility value of 0.189. In design, the highest utility value is unique design, with the value of 0.088

4.5 Conjoint Analysis Clustering Based on Domiciles

Table 10. Conjoint result of JABODETABEK domiciles

JABODETABEK			
Attributes	Relative Importance	Attribute Levels	Utility Value
Packaging Materials	34.632	Plastic	.007
		Paper	-.167
		Seaweed	.160
Brand	31.347	Sari Roti	-.063
		Bread Talk	.083
		Tous Les Jours	-.021
Design	34.021	Conventional	.125
		Minimalist	-.174
		Unique	.049

Source of information: Data Analysis

In table 10. for people living in JABODETABEK area, packaging material is the most preferred attribute, with its relative importance value of 34.632. Short behind packaging material, design is the second most preferred attribute, with the relative importance value of 34.021. Brand on the other hand, is the least preferred one, with the value of its relative importance is 31.347.

Comparing the different attribute level for each option, seaweed is the most preferred attribute for packaging materials, with the utility value of 0.160. For brand, Bread Talk is the most preferred one, with utility value of 0.083, while conventional design is the most preferred attribute for design, with this utility value of 0.125.

Table 11. Conjoint result of outside JABODETABEK domiciles

Outside JABODETABEK			
Attributes	Relative Importance	Attribute Levels	Utility Value
Packaging Materials	34.798	Plastic	-.292
		Paper	.104
		Seaweed	.188
Brand	32.923	Sari Roti	.104
		Bread Talk	.135
		Tous Les Jours	-.240
Design	32.280	Conventional	-.083
		Minimalist	-.031
		Unique	.115

Source of information: Data Analysis

In table 11. similar with people living inside JABODETABEK area, people living outside the area also choose packaging materials as their most preferred attribute, with the relative importance of 34.798. The least preferred attribute for them is the design, with its relative importance value is 32.280, while brand comes in between the two, with its relative importance value of 32.923.

For the different attribute levels, seaweed is the most preferred attribute in packaging materials, with the utility value of 0.188, while Bread Talk is the most preferred brand, proven by its utility value of 0.135. In terms of design, people outside JABODETABEK prefer unique design among others, with its utility value of 0.115.

4.6 Conjoint Analysis Clustering Based on Environmental Awareness

Table 12. Conjoint result of environmentally aware group

Environmentally Aware Group			
Attributes	Relative Importance	Attribute Levels	Utility Value
Packaging Materials	34.258	Plastic	-.264
		Paper	.046
		Seaweed	.218
Brand	31.888	Sari Roti	-.092
		Bread Talk	.310
		Tous Les Jours	-.218
Design	33.853	Conventional	.098
		Minimalist	-.063
		Unique	-.034

Source of information: Data Analysis

Results on table 12. shows the survey data from environmentally aware group, and it comes to no surprise that the most important attribute for them is packaging materials, with the relative importance of 34.258. Design and brand comes in the second and last place, respectively, with the relative importance value for design is 33.853, while for brand is 31.888.

Going into more detailed attribute for each option, seaweed is the most preferred materials for packaging chosen by environmentally aware group, with the utility value of 0.218. For brand, Bread Talk is the most preferred one, shown by its utility value of 0.310, while conventional design is the most preferred design style, with the utility value of 0.098.

Table 13. Conjoint result of relatively aware group

Relatively Aware Group			
Attributes	Relative Importance	Attribute Levels	Utility Value
Packaging Materials	34.273	Plastic	.194
		Paper	-.250
		Seaweed	.056
Brand	32.839	Sari Roti	.236
		Bread Talk	-.347
		Tous Les Jours	.111
Design	32.888	Conventional	-.097
		Minimalist	-.250
		Unique	.347

Source of information: Data Analysis

Surprisingly, the result in table 13. is similar with relatively aware group. For this group, packaging material is still the most important attribute, with relative importance value of 34.273. Design and brand also comes in the second and last place, respectively. The relative importance value for design is 32.888, while it is 32.839 for brand.

For the different attribute levels, plastic is the most preferred materials for packaging, with utility value of 0.194. Sari Roti is the most preferred brand with utility value of 0.236, while design wise, this group prefer unique design, with the utility value of 0.347.

CHAPTER 5

DISCUSSION

5.1 Discussion – All Responses

This chapter discusses and analyses the data of the results using conjoint analysis. To interpret the result of conjoint analysis, it is necessary to look at the plot of the utility values and relative importance value.

5.1.1 Utility Value of Packaging Material

In the utility value analysis, there are three packaging attributes which are: packaging materials, brand, and packaging design. High utility value of an attribute exhibits high consumers' preference towards that one particular attribute. While a low utility value exposes low consumers' preference.

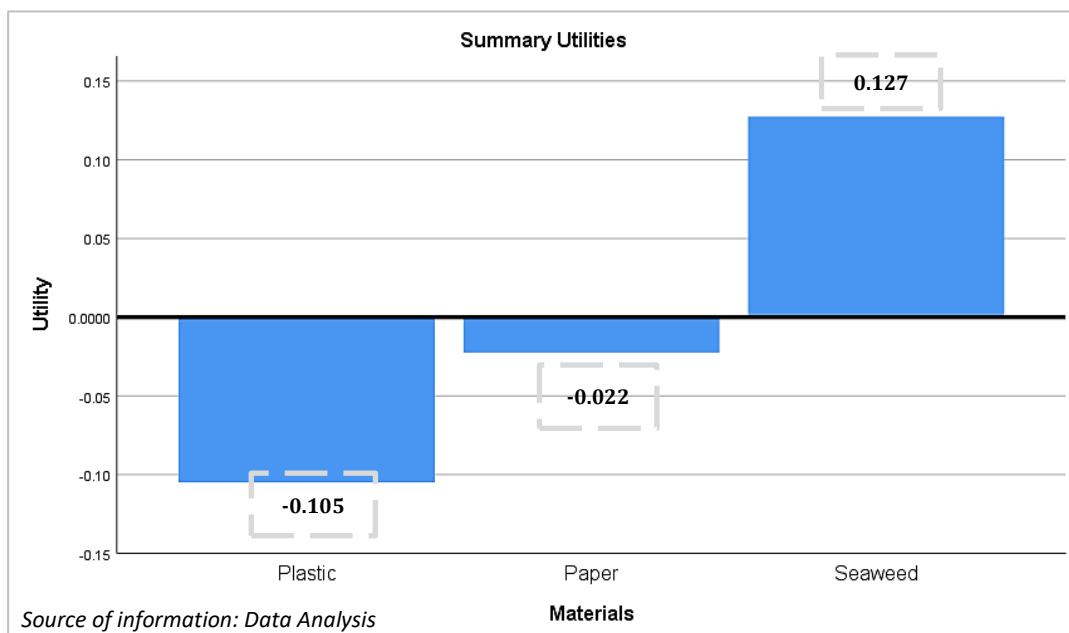


Figure 15. Utility value of packaging material levels

Based on the figure 15. the result shows that respondents highly prefer seaweed as packaging material with the utility value of 0.127. The other materials – plastic and paper are much less preferred by the participants.

However, compared to plastic, paper is slightly more preferred by the consumers with the utility value of -0.022. Meanwhile, plastic is the least preferred packaging material with the utility value of -0.105. From the histogram graph above, it can be assumed that consumers greatly like the idea of seaweed based packaging. This preference may occur because the consumers or respondents have the excitement and get attracted to a new packaging material which was not exist before or is uncommon.

The second assumption, the high preference towards seaweed based materials happens because the market start to realize about the need of a new packaging materials which has no negative impact towards the environment as an alternative for plastic. Hence, it also may explain on the low preference of plastic packaging – either the market get used to it so they become no longer interested or people just start to realize the harms if they continue using plastic packaging.

Meanwhile, paper packaging is slightly more preferred than plastic packaging maybe due to its ability to degrade and rationally it is eco-friendlier compared to plastic. However, it is worth to be noted that paper packaging is usually coated with plastic materials (Khwaldia, Arab-Tehrany & Desobry, 2010), to increase its durability and usage, and therefore paper packaging may not be as eco-friendly as customer would think.

5.1.2 Utility Value of Brand

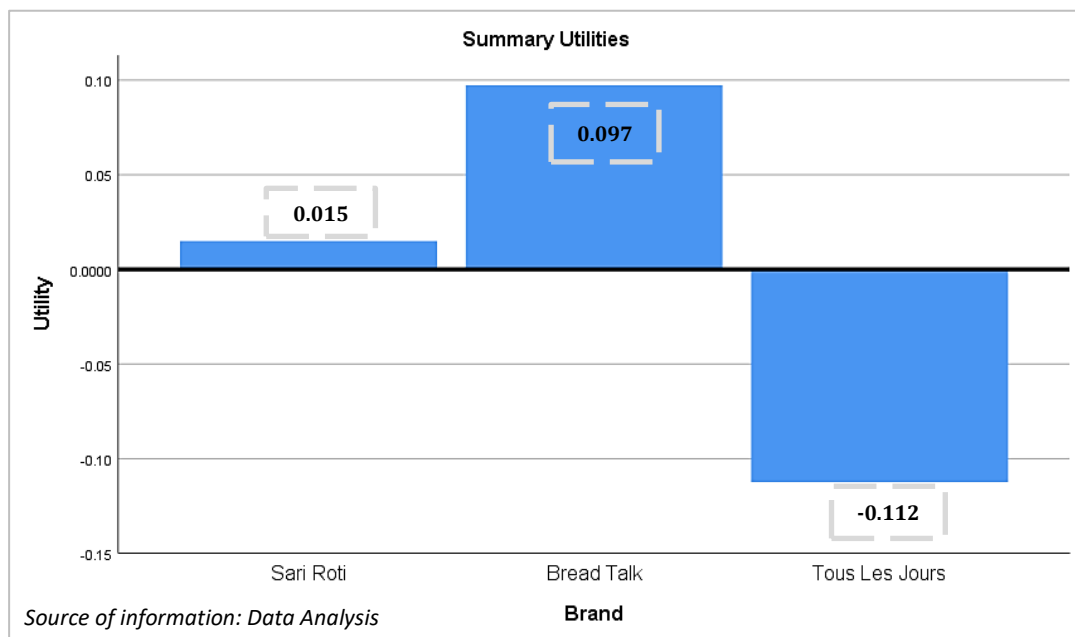


Figure 16. Utility value of brand levels

Figure 16. shows the consumers' choice towards various brands. The result show preference gap between the attribute levels. The higher utility value of an attribute level shows the higher consumers' preference towards that attribute level. The lowest utility value occurs in TOUS LES JOURS with the utility value of -0.112. The low preference on TOUS LES JOURS may happen due to two factors. The first factor - TOUS LES JOURS is well-known as premium brand. Premium brand typically has the characteristic of high price which may restrict some types of market segment (middle income people) to choose this kind of brand.

Sari roti is slightly preferred by the participants with the utility value of 0.015. While Bread Talk stands out as the most preferred brand by the consumers with the utility value of 0.097. Sari Roti is widely known as affordable bread which can be found almost anywhere from small traditional stores to big supermarket chain and peddlers. However, this research's result shows that in fact, Sari Roti is not really preferred by consumers. This may happen because Sari Roti sells bread in a cheap price, making it well-known as cheap bread brand which understandable that it may not be preferred by middle to upper class consumers that may be taking part in the survey. Other than that, since Sari Roti can be found anywhere, regular purchase and wide availability may make the market get bored of their

products. Also, Sari Roti brand does not various bread, in which this factor may limit the consumer choice.

Bread Talk has chain stores all across Indonesia. They usually have their stores open at malls in big and small cities. Targeting middle class market, Bread Talk put price in which suitable for middle income people. Bread Talk have many varieties of products and is well-known of being price-worthy. Thus, in this research it is understandable that Bread Talk was most-preferred by the respondents.

5.1.3 Utility Value of Design

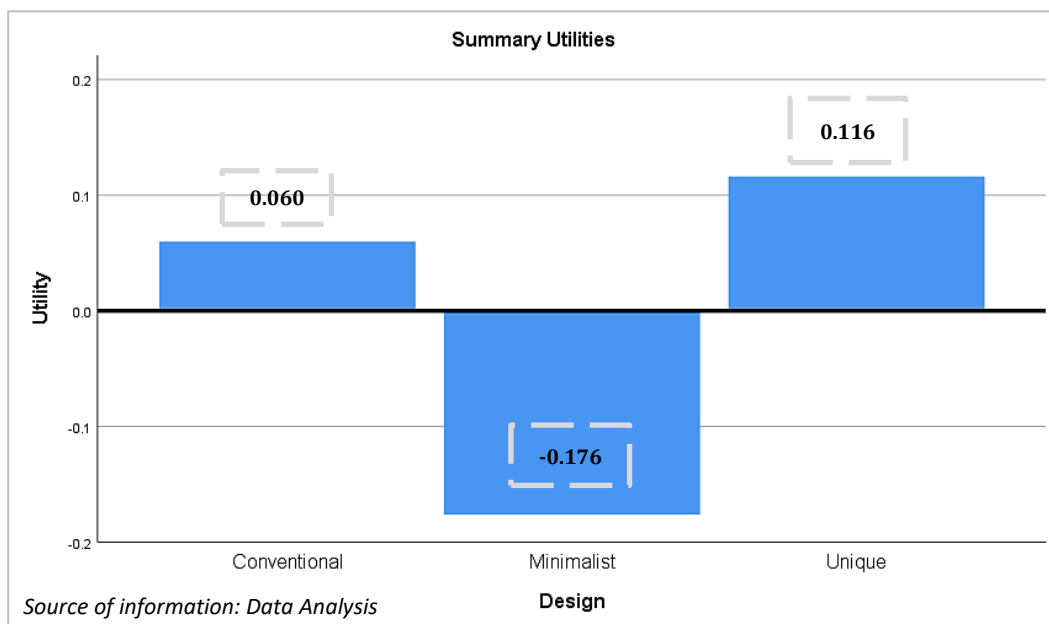


Figure 17. Utility value of packaging design levels

The above figure describes which the consumers' preferences towards packaging design. As can be seen on the above figure, unique packaging design gained the highest utility value of 0.116 meaning that it is highly preferred compared to the other available options. The high preference on unique packaging design happens because in Indonesia, unique packaging design is rarely can be found, especially for bread. Also, the uniqueness makes the packaging more eye-catching and attract people to buy the product.

Conventional packaging design is the most-preferred after unique packaging design with 0.060 utility value. In this research, conventional bread packaging design is the packaging type that is very

common and generally used to package bread in the market. Based on the survey result, it can be said that consumers are satisfied with the existing bread packaging which widely used by bread producers. However, the research shows they possibly choose the unique one if available.

Minimalist packaging was least favored by the respondents with the utility value of -0.176. The reason for this is unclear, however I assume this may happen due to unfamiliarity of Indonesian customer with the minimalist design. Most of the product packaging in Indonesia still contains a lot of information and bright colors, and this is what Indonesia consumers are accustomed with. Showing unfamiliar things to the respondent, in this case the minimalist packaging, would then result as the least preferred option.

5.1.4 Summary of Relative Importance

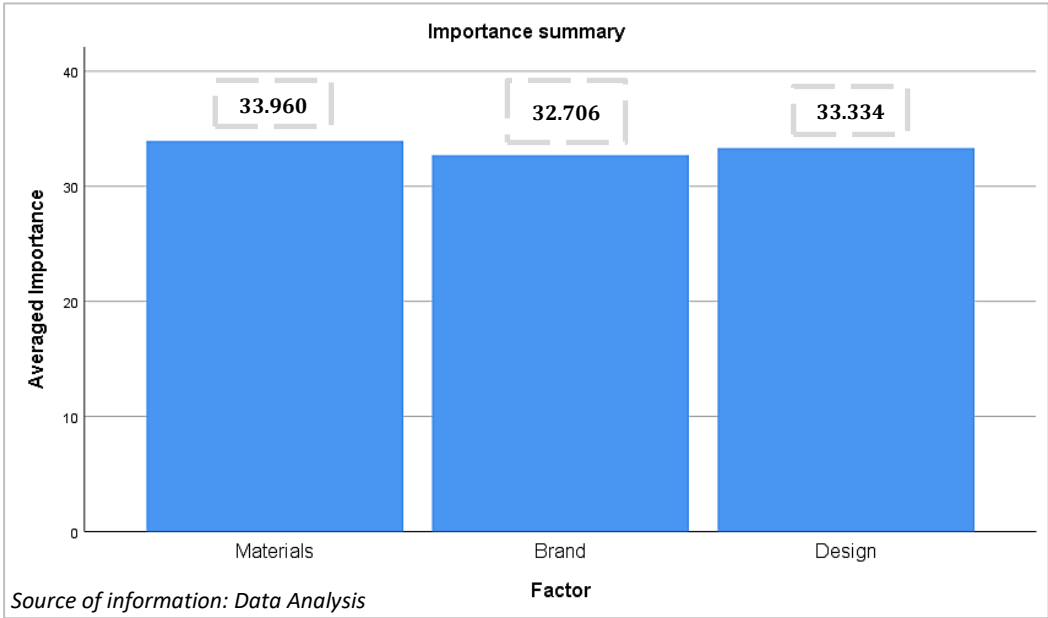


Figure 18. Relative importance of all attributes

From the overall attributes' relative importance, it can be described that the main attribute which respondents pay attention highly was materials with the relative importance value of 33.960. The second-highest relative importance was design with the relative importance of 32.706 and the last was brand with the relative importance of 33.334. In this research there was no big difference between the relative importance between the attributes. Therefore, based on each attributes relative

importance value, it can be considered that consumers do not significantly differentiate between those attributes, but rather see it as a complete package that represent the product. Indeed, choosing a product solely on its particular attribute is not always the case, thus companies need to develop a certain competitive advantage that altogether can lure the customers to purchase their product. In other words, customer behavior is a complex matter (Salem Khalifa, 2004), but once understood, companies can easily attract the customer to choose their product.

5.2 Discussion – Clustering Based on Gender

Separately, the conjoint analysis was done to analyze different groups. In this research, the researcher tries to cluster the participants in order to understand various different pattern of consumer preference on bread packaging by comparing the groups under the same category. The clustering was done by dividing the survey data based on its categories: gender, income level, domicile and environmental awareness.

Table 14. Relative importance male vs. female group

Attributes	Relative Importance - Male	Relative Importance - Female
Packaging Materials	37.109	32.705
Brand	25.230	35.962
Design	37.661	31.333

Source of information: Data Analysis

Table 14. Compare the attributes’ relative importance value between male group and female group. From the table, it can be seen that the most important attributes for male group is design while brand is the least important attribute. On the opposite female group has brand on their top of mind and design on the bottom line. Meanwhile, packaging materials is not the main important attribute for

both group but is not the least either, so can be said both groups neutrally consider packaging materials when they look at bread packaging attributes.

Table 15. Utility value male vs. female group

Attribute Levels	Utility Value - Male	Utility Value - Female
Plastic	-.253	-.063
Paper	-.126	.006
Seaweed	.379	.057
Sari Roti	.195	-.101
Bread Talk	-.218	.302
Tous Les Jours	.023	-.201
Conventional	.080	.019
Minimalist	-.069	-.145
Unique	-.011	.126

Source of information: Data Analysis

Table 15. Explains male and female group preference towards attribute levels. On packaging materials, seaweed is highly preferred by both group with the utility value of 0.379 from male group and 0.057 by female group. However, based on the number male group value seaweed packaging greater than the female group. Furthermore, plastic packaging is least preferred by both groups – female preference towards plastic is higher than male group. Thus, can be assumed that this preference equivalent with the general preference from overall data on chapter 5.1.

Meanwhile, in brand preference, male group has highest preference on Sari Roti and least prefer Bread Talk. While female group has highest preference towards Bread Talk and least preferred Tous Les Jours. Male group high preference towards Sari Roti may happen because the Sari Roti products are available almost everywhere and has cheap price. Male in general usually has simple way of thinking when it comes to decision making in buying a product. Therefore, Sari Roti in their point of

view may be the best option to fill their hunger as it can be bought easily and at a very cheap price. Male preference towards Bread Talk and Tous Les Jours is on the opposite from female group's preference. Male group prefer Tous Les Jours more than Bread Talk, although Bread Talk clearly has cheaper price. Based on an interview with one of the male respondent, a better economic condition would make him choose to purchase bread from Tous Les Jours, due to the more exclusive and more premium look of the store condition. This leads to understanding that a more exclusive and premium style of the store means that the product offered will also have more premium quality, which interest the mid to high economic class male respondents. This male opinion's is in fact align with the number of middle to high income respondents in this survey which take up 65% of the total respondents, which resulted on the considerably high preferences on Tous les Jours for the male group.

As discussed previously, brand is the most important attribute by female group's point of view. Based on the conjoint analysis, the result shows that female group has least preference towards Tous Les Jours and highest preference on Bread Talk. This result may explain the buying behavior of female in which they tend to have strong judgement related to brand association and price (Rajput, Kesharwani & Khanna, 2012). The female consumers' least preference on Tous Les Jours may happen because the brand is famous as premium brand while consumers can get similar variant of bread with lower price in Bread Talk, hence Bread Talk is highly preferred by female group. Meanwhile, in between those preferences, female group pick over Sari Roti, this preference may occur because Sari Roti is cheap and available everywhere. However, it lacks on variety and taste is below Bread Talk. Hence Bread Talk has the highest preference due to its comprehensiveness related to price, taste, and product variety.

On the design preferences, male group most preferred conventional packaging design while female group most preferred unique design. While both groups show lowest preference on minimalist packaging design – align with the general preference from overall data on subchapter 5.1.3. The male group highest preference on conventional design occur because male generally favor simple design. However, conventional design which generally available in Indonesia has quite simple design. There

was no significant gap between the male group’s low preference towards minimalist and unique design. The male group may have low preference on minimalist and unique design because those kind of design are not familiar in Indonesia.

On the other side, female respondents show their significant high preference on unique packaging design. Commonly women love product which design is interesting and unique – or even in Asia, women love packaging or product which they consider to have ‘cute’ design as it attracts them more and drive their intention to purchase the product. The second-highest preference amongst female group was conventional design. Conventional design is very familiar for Indonesian consumers. Therefore, it is still preferred due to its familiarity. Meanwhile minimalist design is not common and sometimes seen as atonic and unattractive.

5.3 Discussion – Clustering Based on Income Level

Table 16. Relative importance low Income vs. middle to high income group

Attributes	Relative Importance - Low Income Group	Relative Importance - Middle to High Income Group
Packaging Materials	39.441	30.972
Brand	29.262	33.965
Design	31.296	35.063

Source of information: Data Analysis

Table 16. discusses the relative importance of attributes based on low income group and middle to high income group’s point of view. On the top of priority, low income group come with packaging material as the most important attribute with the relative importance value of 39.441. While middle to high income group perceived design as the most important attribute.

It is surprising that the survey result shows that the low income group has high preference towards packaging materials while middle to high income group has least preference on packaging

material. Also, the low income group consider brand as the least important attribute. It is contradictory because typically low income group will consider brand before they purchase a product because brand has strong correlation with price, in which price must impact the low income group’s purchase decision. Nevertheless, it is worth mentioning that price sensitivity and its effect on household income purchasing decision might be situational, as proposed by Wakefield and Inman (2003).

The middle to high income group assumes that design and brand are important based on the result, design has the utility value of 35.063 while brand has the utility value of 33.965. Typically middle to high income group has higher purchase capability and higher tendency on buying product with luxurious design and brand. Hence, both attributes are important for them.

Table 17. Utility value low income vs. middle to high income group

Attribute Levels	Utility Value – Low Income Group	Utility Value – Middle to High Income Group
Plastic	-.262	-.088
Paper	.060	-.038
Seaweed	.202	.126
Sari Roti	.024	-.006
Bread Talk	.012	.189
Tous Les Jours	-.036	-.182
Conventional	.107	.019
Minimalist	-.167	-.107
Unique	.060	.088

Source of information: Data Analysis

Table 17. shows the preference of attributes levels between low income group and middle to high income group. Both groups have highest preference on seaweed as packaging material. However, the low income group preference towards seaweed packaging is higher. Likewise, both group generally

have the same preference towards paper and plastic packaging although in more details, the middle to high income group has higher preference towards plastic compared to low income group. This similarity of preferences also occurs to the general preference from overall data chapter 5.1. The high preference towards seaweed packaging may happen due to perception that seaweed packaging is new and therefore unique. Furthermore, even though the clustering separate respondents based on their incomes. However, the respondents are generally at the same age range and have good education background or can be said as well-educated, so it can be assumed that they pretty much have enough knowledge regarding environmental issues caused by packaging. Thus, although they have different level of incomes but their preferences on packaging materials appear to be the same.

For brand preference, low income group has least preference on Tous Les Jours and highest preference on Sari Roti. Although on the relative importance result, low income group perceived brand as least important attribute but they still mostly pick or prefer Sari Roti, which has strong reputation as affordable and widely available brand, while Bread Talk and Tous Les Jours come as second and the least preferred brand, respectively. This result is closely related with their income level. Since their income are low, hence they have high tendency to choose Sari Roti – brand in which they can purchase (Hammond & Prahalad, 2004). On the other side, the low preference on Tous Les Jours most probably happens due to their economic inability to afford the product.

Middle to high income group has highest preference on Bread Talk and least preference on Tous Les Jours. Bread Talk are available at malls in almost every city. Meanwhile Tous Les Jours brand is slightly more exclusive and consider as premium, in which much more difficult to find especially in areas which are not a part of capital city. Other than that, the results may show that middle to high income group may still consider price factor in their purchasing decision. The middle to high income group may still prefer Sari Roti in between may be because it is worth-the-price product; it is widely available everywhere.

Low income group mostly prefer conventional packaging while middle to high income group mostly prefer unique packaging design. Conventional packaging has strong correlation with product

like Sari Roti and almost for all affordable brands hence conventional packaging is highly preferred by the low income group. Meanwhile middle income group slightly prefer unique packaging may be due to its uniqueness which add value in product attractiveness. While they do not really prefer the minimalist packaging (similar result with previous subchapter) may be either because our Indonesian people are not familiar with minimalist packaging or may because the design is too simple and more seems like the producer put zero effort in their packaging design. This tendency of low preference in minimalist packaging design also appear in middle to high income group.

On the other hand, middle to high income group has high preference on unique packaging design. May be unique packaging design seems to be more exclusive and the uniqueness able to attract middle to high income people to buy. Middle to high income group slightly less prefer conventional packaging. This preference may occur because the market is familiar with this type of packaging but at the same time is surfeited with conventional packaging which commonly found in the market.

5.4 Discussion – Clustering Based on Domiciles

The clustering based on JABODETABEK and outside JABODETABEK area intends to see the differences on preference between people who live in developed area with those who live in small cities. People who lives in developed cities tend to have modern mindset and behavior compared to those who lives in small cities or less developing areas.

Table 18. Relative importance JABODETABEK vs. outside JABODETABEK

Attributes	Relative Importance - JABODETABEK	Relative Importance - Outside JABODETABEK
Packaging Material	34.632	34.798
Brand	31.347	32.923
Design	34.021	32.280

Source of information: Data Analysis

Based on the table 18, both group – JABODETABEK and outside JABODETABEK domiciles see packaging material as the most important attribute and both perceived similar relative importance for packaging materials. Design is the second-most important attribute for JABODETABEK domicile and brand has the least importance. Those who lives in JABODETABEK may think that design is one factor that drive them to purchase a product. While for brand, because all brands available are easily found in JABODETABEK area hence people has no difficulties in finding the brand, thus it is not the most important attribute.

Table 19. Utility value JABODETABEK vs. outside JABODETABEK

Attribute Levels	Utility Value - JABODETABEK	Utility Value – Outside JABODETABEK
Plastic	.007	-.292
Paper	-.167	.104
Seaweed	.160	.188
Sari Roti	-.063	.104
Bread Talk	.083	.135
Tous Les Jours	-.021	-.240
Conventional	.125	-.083
Minimalist	-.174	-.031
Unique	.049	.115

Source of information: Data Analysis

On the other side, those who live outside JABODETABEK have not much difference of relative importance between brand and design. However, in contrast with JABODETABEK domiciles, those who live outside JABODETABEK area perceive that brand is slightly more important than design.

Both groups also have same preference towards packaging materials and brand, in which they mostly preferred seaweed and Bread Talk. Seaweed packaging is still new and is unique, therefore it

gained high preference from both groups. While Bread Talk has wide range of product varieties and easily found in both big and small cities. Also, the Bread Talk brand targets middle income people and is still affordable.

Those who lives in JABODETABEK prefer plastic more than paper packaging may due to plastic functionality in which it is more durable than paper packaging. Based on an interview with respondent from outside JABODETABEK domicile, paper packaging is more preferred because it looks fancier and better for the environment.

For brand preferences, those who lives outside JABODETABEK area have least preferences on Tous Les Jours. This tendency may happen because Tous Les Jours brand is less familiar in small cities. Bread Talk has higher preference because it can be found at shopping centers in big and small cities and it has a lot of product varieties and still affordable in terms of price. While Sari Roti is slightly less preferred by outside JABODETABEK domiciles may due to the less varieties and market saturation.

Respondents who lives in JABODETABEK least prefer Sari Roti may due to saturation. However, the difference on preference between Sari Roti and Tous Les Jours is slightly. This may occur because Tous Les Jours is a premium brand.

For the design packaging, JABODETABEK domicile most preferred conventional design, this may happen due to familiarity. However, they have slightly different preference towards unique packaging. Unique packaging offer something new attractiveness to consumers. While minimalist packaging design is the least preferred may because the design looks empty.

Meanwhile, outside JABODETABEK domicile prefer unique design and least preferred conventional packaging design. This result may have shown that people who lives in small cities has the tendency to like something which is new and unusual to them; hence, the preference on conventional packaging design is low.

5.5 Discussion – Clustering Based on Environmental Awareness

The clustering based on environmentally awareness was done by grouping the respondents based on their answer on whether they are concern about environmental issues. Fifty respondents responded that ‘yes’, they are concern about environmental issues while the thirty-three rest answered they ‘may be’ aware about environmental issue, and none of the respondents answered ‘no’. In this clustering based on environmental awareness, brand and design preference is not observed in details because the researcher mainly wants to see whether the preference on packaging materials is align with what the respondents believes.

Table 20. Relative importance of environmentally aware vs. relatively aware group

Attributes	Relative Importance - Environmentally Aware	Relative Importance - Relatively Aware
Packaging Materials	34.258	34.273
Brand	31.888	32.839
Design	33.853	32.888

Source of information: Data Analysis

Both groups have highest value towards packaging materials above all attributes, even though the relative importance difference between the attributes are not significant. This data proves that both groups purchase intention is highest affected by the packaging material. In addition, both groups preferences are also similar in which their preference towards design is higher than brand; meaning that the way both groups perceived the importance of attributes are alike.

Table 21. Utility value of environmentally aware vs. relatively aware group

Attribute Levels	Utility Value – Environmentally Aware	Utility Value – Relatively Aware
Plastic	-.264	.194
Paper	.046	-.250
Seaweed	.218	.056
Sari Roti	-.092	.236
Bread Talk	.310	-.347
Tous Les Jours	-.218	.111
Conventional	.098	-.097
Minimalist	-.063	-.250
Unique	-.034	.347

Source of information: Data Analysis

For the attribute levels' utility value, environmentally aware group has highest preference on seaweed, Bread Talk, and conventional design. Meanwhile the other group highly prefer plastic, Sari Roti, and unique design. In the result, can be seen that environmentally aware group choose seaweed packaging compare to other options. While relatively aware group has tendency to prefer plastic. It proofs that based on their choices, environmentally aware group choose the environmentally-friendly packaging which is seaweed. While in contrast, the relatively aware group which has high preference on plastic may be perceived that they have the tendency of neglecting environmental issue and still chose the dangerous material even though they feel like they are might aware of environmental issues. This might be due to unconvincing information that these groups have received regarding the effect of plastic on environment, which leads them to become skeptic on the negative effect of plastic towards the environment.

Additionally, the relatively aware group has high preference on Sari Roti in which it may mean that they like affordable brand. This also relates to their preference on plastic packaging, in which in general product with plastic packaging has cheaper price compared to using another material like paper or seaweed. The relatively aware group has highest preference on unique packaging design and low preference on conventional design and lowest preference towards minimalist design.

On the other side, the environmentally aware group most preferred seaweed as packaging material, and considerably favor paper but has least preference on plastic packaging. The utility value produced on the result can be said is align with the value which environmentally aware group valued seaweed has positive impact to the environment, hence is highly preferred. While plastic harms the environment, hence least favored by the respondents. The group has highest preference on Bread Talk and least preferred Tous Les Jours. While for the packaging design, the group highly favored conventional packaging design.

Both groups least preferred minimalist design. This occurrence also happens to several groups discussed previously.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The results obtained in this research have shown several new understanding towards appeal factors of biodegradable packaging in Indonesia. The overall result obtained from all respondents without clustering shows that consumers sense highest importance on packaging material. Also, it is known that respondents have high preference on seaweed as packaging material, while plastic is least preferred.

In clustering, similar patterns specifically found in low income group, JABODETABEK domiciles, outside JABODETABEK domiciles and environmentally aware group. Furthermore, all groups in fact have highest preference towards seaweed based packaging; except the 'relatively aware' group which has highest preference for plastic packaging. Also, based on the respondents' response, 69.87% of the respondents answered that they are environmentally aware and highly prefer biodegradable packaging. The result brings optimism in which it can be interpreted that majority of Indonesian consumers have the interest and may have the willingness to use and purchase product with seaweed-based packaging. The result also able to answer the research problem – based on the result, the Indonesian market has high interest towards biodegradable packaging, more especially packaging made from seaweed. This optimism can further encourage biodegradable packaging companies to continuously innovate, widely market their product, and to reform the food packaging industry in Indonesia.

Besides the implications for packaging industry, this research also gives insights for bread producing companies. This research result shows that bread companies have to look for further details for their packaging. Because even though the brand is well-known and already have specific target market; however, different consumer group has different reference towards packaging overall attributes. For example, for male group, design has the highest importance value while for female

group; the brand has highest importance value. Furthermore, men preferred packaging with conventional design while women preferred unique packaging design. Other than that, different income level also results in different preference. For example, people with low income level prefer

Sari Roti brand and conventional packaging design – meaning they choose product which in their perception is affordable and appropriate for their income level. While the middle to high income group prefer Bread Talk and unique packaging design. This kind of implication shows that higher income level brings higher complexity of demand. Also, different living area also impact on different preferences. For example, people who lives in big-crowded city have to have simpler way of thinking hence they may prefer conventional packaging in which they are familiar with but still functional. While those who lives in small cities may love to have excitement which drives them to highly prefer unique packaging – which considerably is a new thing for them.

In action, if companies are planning to apply biodegradable packaging in their product, they should think further because not all Indonesian consumers are aware about environmental problems. Hence, right now the best option is to create and start campaign on plastic dangers before applying biodegradable packaging to the products. Also, if when applying biodegradable packaging, companies should look at other attributes that able to support the overall product value and also to prepare strategy to target the right market segment.

6.2 Recommendations

In addition to make elevate the research comprehensiveness, further research has to be done by adding the number of respondents in order to carry higher validity and increase the sample ability to represent Indonesian consumers' preference. Also, extending the research will enable to give more details data and stronger reasoning behind each answer.

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